

## Catalogue of American Amphibians and Reptiles.

Parra-Olea, G. and M. García-París. 1998. *Bolitoglossa hartwegi*.

*Bolitoglossa hartwegi* Wake and Brame

*Bolitoglossa hartwegi* Wake and Brame 1969:10. Type locality, "4.5 miles W San Cristóbal de Las Casas, Chiapas, México." Holotype, University of Michigan Museum of Zoology (UMMZ) 121557, adult female, collected 30 June 1960 by F.L. Downs (not examined by authors).

• **Content.** No subspecies are recognized.

• **Definition.** Adult *Bolitoglossa hartwegi* are somewhat robust and of moderate size (males to 47 mm SVL, females to 55 mm SVL). The strongly tapered tail is relatively short (1/4 or 1/3 smaller than SVL). Costal grooves number 13. The limbs are long and, when adpressed, are separated by a space of 1 or 2 costal grooves. Hands and feet are extensively webbed and digital tips are pointed. The head is broad. A moderate to high number of maxillary teeth are present (female mean 54.2; male mean 50); vomerine teeth number is moderate (female mean 27.7, male mean 23.1).

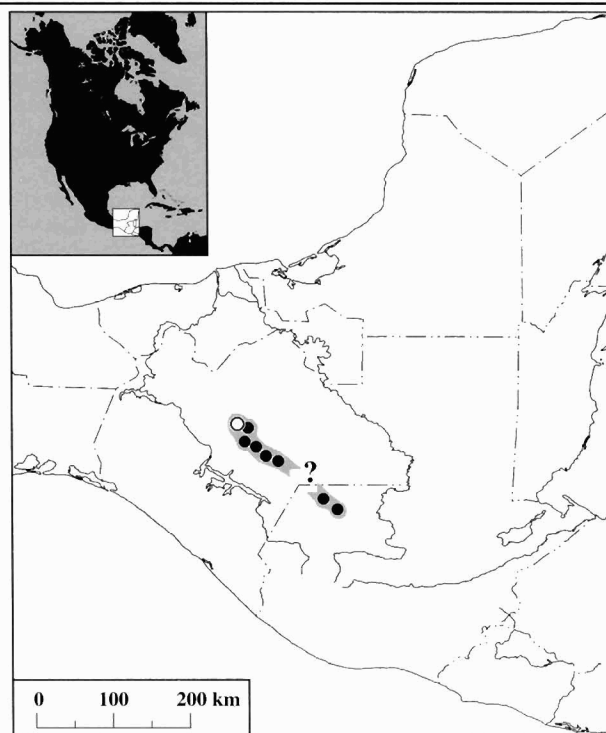
Coloration is highly variable. The dark brown dorsum is mottled with darker brown and black, and scarce or very dense lichen-like green dots. The venter is very light, often creamy or even white, with darker pigment typically present midventrally.

• **Diagnosis.** This species is distinguished from *Bolitoglossa flavimembris* by its smaller size, more extensively webbed hands and feet, phalangeal elements, especially the terminal ones, reduced in size and modified in shape, lack of subterminal pads, and non-uniform body coloration; from *B. cuchumatana* by more extensively webbed hands and feet, smaller terminal phalanges, and lack of subterminal pads; from *B. stuarti* by smaller size, broader head, less extensively webbed hands and feet, relatively longer digits, and fewer maxillary teeth. *Bolitoglossa hartwegi* may be distinguished from members of the *rufescens* group by its larger size, broader head, larger limbs, hands and feet, and higher numbers of maxillary teeth (Wake and Brame 1969).

• **Descriptions.** Wake and Brame (1969) gave a very detailed description of this species. Elias (1984) wrote a species account.

• **Illustrations.** Wake and Brame (1969) provided a photograph of the holotype, and a photograph of the paratypes. They also provided a drawing of the holotype in dorsolateral and ventral views and drawings of the following structures: head, hands and feet, skull, and hyobranchial apparatus.

• **Distribution.** *Bolitoglossa hartwegi* is known to occur at Cerro Zontehuitz, Municipio de San Cristóbal de las Casas and



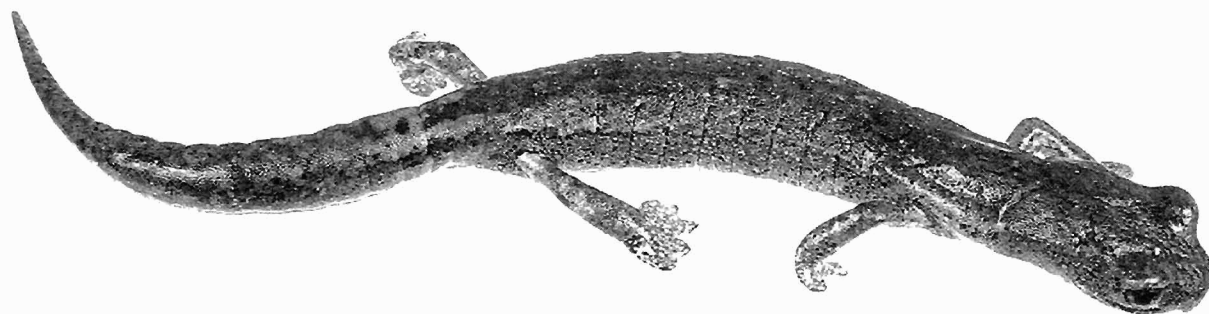
**Map.** Distribution of *Bolitoglossa hartwegi*. The circle marks the type locality, other localities are indicated by dots. The question mark denotes a possible hiatus in the range.

Municipio de Chamula in the east-central portion of Chiapas, México and the adjacent Cordillera de los Cuchumatanes, Guatemala. In Chiapas, the species has not been found below 1900 m, whereas in Guatemala it has been collected at elevations from 1200–2800 m (Wake et al. 1992).

The species is associated with coniferous and oak forests associated with limestone outcrops, where it may be primarily a crevice-dweller. Specimens have been collected from rock crevices, beneath flakes of rock on ledges, under the bark of logs, under cover objects on the ground, and less frequently in arboreal bromeliads (Wake and Lynch 1976, Wake and Brame 1969). The species is active on rainy or humid nights (Elias 1984).

• **Fossil record.** None

• **Pertinent literature.** Studies of erythrocytes in this species were made by Villolobos et al. (1988); foot structure and function was discussed by Alberch (1981) and Wake and Lynch (1976); information on distribution and habitat use was given by Wake and Lynch (1976), Campbell and Vannini (1989), and Johnson (1989). Field body temperatures were studied by Feder



**Figure.** Adult *Bolitoglossa hartwegi* from Cerro Chicahuaxtla, Veracruz, México (photograph courtesy of D.B. Wake).

et al. (1982). Studies of protein electrophoresis were conducted by Larson (1983a) and evolutionary trends in foot morphology by Larson (1983b).

• **Remarks.** Wake and Brame (1969) assigned this species to the *Bolitoglossa helmrichi* group and indicated that its closest relatives were *B. veracrucis* and *B. stuarti*. Elias (1984), based on morphology, recognized a *veracrucis* group composed of *B. veracrucis*, *B. stuarti*, and *B. hartwegi* as a separate unit from Wake and Brame's *helmrichi* group. Analysis of protein electrophoresis (Larson 1983a) does not completely resolve the affinities of *B. hartwegi*, but its divergence from other species supports Elias's *veracrucis* group as distinct. Morphologically, this species is very similar to the lowland forms *B. rufescens* and *B. occidentalis*, but it is larger and somewhat more robust than those species.

*Bolitoglossa hartwegi* is smaller and has lighter ventral coloration than *B. veracrucis* and *B. stuarti*. Geographically, *B. stuarti* occurs at lower elevations to the east and south of the range of *B. hartwegi*, and *B. veracrucis* occurs at much lower elevations to the west (Wake and Brame 1969).

The populations from Guatemala were assigned to *B. hartwegi* based on a unicolor dorsum (Elias 1984), but morphometric analysis of the two groups of populations (Chiapas versus Guatemala) show two well-differentiated morphological units (unpubl. data). Molecular analysis is being conducted currently, and the populations from Guatemala may represent a different species.

• **Etymology.** This species was named in honor of Professor Norman Hartweg, University of Michigan.

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